AGRICULTURAL NEWS

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This publication contains information regarding the investigations of farmers on agriculture based on laboratory and field investigations by the Du Pont Company. It also contains published reports of investigators at agricultural experiment stations and other institutions on subjects of interest to the Company's products and other subjects of agricultural interest.

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POLYTHENE PLASTIC FILM ENTERING NEW FIELDS

Polythene transparent film is a new contribution to the packaging field. Manufacturers are making it available in various sizes of bags for use in storing fresh foods in the refrigerator and bag-in-box packets made especially for packaging frozen foods. The bags are reusable and may be washed in warm water.

Manufacturers are recommending that the bags be sealed in two ways, with a rubber band (included in the package) or by heat-sealing.

If heat-sealed with an ordinary iron, manufacturers recommend a temperature similar to that used for ironing wool (about 250 degrees F.). They also recommend placing a piece of paper or cellophane between the iron and the polythene while making the seal. A heat sealer has been designed for polythene film. It is lined with "Teflon" tetrafluoroethylene resin, a plastic which eliminates the problem of sticking.

When using polythene bags for keeping fresh fruits and vegetables in the refrigerator, manufacturers advise against heat-sealing. The food needs to breathe and a rubber band or fold-over wrap makes this possible.

Another new use for polythene sheeting is as the wrap for bulk packaging meat and other produce. It's wrapped around the food, before freezing.

It's a long way from packaging to curtains for the kitchen or bathroom, but colorful sheets of polythene are now being sold in retail stores. The sheets are available in a variety of colors and since polythene can be successfully sewed on the machine, it will have many uses.

The fact that the film is tough, resists tearing and cracking, is odorless, and can be cleaned wtih a damp cloth makes such things as curtains, garment bag covers, shower curtains, baby bibs, aprons, and even a simple raincoat practical to make in the home.

We wish to extend congratulations to Gus M. Oehm on his new position as director of public relations of the Pineapple Research Institute of Hawaii at Honolulu, T. H. We know the many readers of the Agricultural News Letter who are acquainted with Gus, or who read it during the years he was editor, will join us in wishing him every success.

CLOSE TEAM WORK REQUIRED IN SEARCH FOR NEWER, SAFER INSECTICIDES, ACCORDING TO DU PONT PLANT PATHOLOGIST

Safety to man, animals, and plants should be one of the leading goals sought for in new insecticides, Dr. Wendell H. Tisdale said in an address before the 115th National Meeting of the American Chemical Society at San Francisco, Calif.

"Synthetic organic compounds now dominate the field of new insecticides," he said, and "recent investigations have uncovered a few very promising products for many uses." He cited as an example the new product known as methoxychlor which, although related chemically to DDT and highly effective on a wide variety of insects, "is much less toxic to warm-blooded animals than is DDT."

Dr. Tisdale, who is manager of pest control research for the Grasselli Chemicals Department of E. I. du Pont de Nemours & Company, and a plant pathologist of wide experience, spoke on "Responsibilities of the Chemist in the Development of Insecticides," before the Division of Agricultural and Food Chemistry.

"The successful development of insecticides," he said, "requires a broad and thorough knowledge of the ever-changing and unfilled needs for better insecticidal compounds, and of the fields of chemistry, physics, engineering, and biology that pertain to the development of such products."

Successful work in this field requires also, he said, close cooperation on the part of the entire team that carries the development from the laboratory stage to successful field use. This team comprises the research chemist who synthesizes new products of potential value as insecticides; the biologists who understand the structure and function of insects, and of the plant and animal hosts on which the insecticides are to be used, and who determine the insecticidal effectiveness of new products, both in the laboratory and under practical conditions of use; the engineers who design a plant for commercial manufacture of the insecticides; the chemists who aid in making the most efficient formulation of the pest-control chemical, and who make regular checks on the product to insure uniform, high quality; the toxicologist who determines what precautions are necessary in manufacturing and using the insecticide; and, finally, the technical sales-service man who sees to it that the product is used in such a way as to insure maximum effectiveness.

Safety to Humans and Animals Stressed

"In spite of the extensive progress made in recent years," Dr. Tisdale said, "there are still some important insect pests for which there are no satisfactory chemical controls. Solutions to many of these difficult insect control problems appeared to be accomplished with the discovery of DDT, benzene hexachloride, and some of the more recent insecticides. It is

difficult to over-estimate the importance of these discoveries when the needs were most urgent. Further studies, however, of the toxicity of some of these products to warm-blooded animals has raised a question regarding the advisability of continuing their use where food and feed products are concerned.

"Among the most important characteristics of an insecticide is its safety to humans. In recent years the United States Government, state authorities, and commercial organizations have given much attention to toxicity problems and to the safe use of products known to be toxic. New insecticides are being thoroughly studied by competent toxicologists. Incidentally, some of the new chlorinated compounds are not as safe as they were once thought to be. It has been necessary to modify or even withdraw claims concerning their safety to humans, and specify methods of safe use."

FOURTH EDITION TRANSFORMAGIC BOOK NOW AVAILABLE

All sorts of simple new designs for making old furniture and old rooms into new ones are described in the new TRANSFORMAGIC booklet which Peter Hunt and the Du Pont Company have just produced.

The fourth edition of the booklet, published by the Finishes Division of the Du Pont Company, is now available at paint stores handling Du Pont finishes, or by writing direct and sending 25 cents in stamps or coin to Room 7010, Du Pont Building, Wilmington, Del.

Interest in the style which Peter Hunt and his Peasant Village workshop at Provincetown popularized has increased by leaps and bounds since the first edition was published by Du Pont in 1943.

The new large-size, 40-page booklet covers a lot of ground. Besides giving basic instructions, it shows how nurseries, kitchens, and all other rooms in a house can be brightened up with discarded old furniture which has been made into new. It also shows how to fix up a modern new kitchen in the peasant style. Gaiety and simplicity continue to be the themes for TRANSFORMAGIC.

U.S.D.A. SAYS 2,4-D SUCCESSFULLY KILLS BARBERRY, HOST PLANT OF STEM RUST THAT ATTACKS SMALL GRAINS

Successful use of 2,4-D to kill barberry bushes, host plants of stem rust that attacks small grain crops, is reported by the U.S. Department of Agriculture.

"In most seasons the eradication of barberries in the northern grain areas gives almost complete protection of wheat, oats, barley, and rye against damage by stem rust," Department spokesmen point out.

"The barberry canes are cut close to the ground with pruning shears, and the freshly cut stubs are covered with a strong 2,4-D solution, which causes a complete kill. This solution is much stronger than is used in weed killing in lawns or grain fields."

They explain that use of 2,4-D "is much more economical and effective than grubbing."

RESEARCHERS SUGGEST WEED KILLER FOR WILD CHOKECHERRY, HOST OF X-DISEASE THAT ATTACKS CHERRY, PEACH ORCHARDS

Destruction of disease-carrying wild chokecherry bushes with a suitable herbicide is recommended by New York research workers for control of X-disease or yellow red virosis not only in peach orchards but on sour cherry trees as well.

Use of "Ammate" weed killer, containing ammonium sulfamate as the active ingredient, to kill the common wild chokecherry plant, which serves as a host for the virus, has been common practice among peach growers for several years. Peach trees growing near infected chokecherries have been similarly infected, and have been quickly reduced in productiveness to the point where the orchards are no longer profitable. Now, since it has been rather well established that the mysterious disease causing poor yields of sour cherries in many New York orchards is the same X-disease, horticultural authorities are urging growers to destroy the host chokecherry plants in the vicinity of cherry as well as peach orchards.

X-Disease Serious Threat to Cherry Industry

"X-disease has already been sufficiently destructive in some sour cherry orchards to constitute a serious threat to the industry if it is not checked promptly," say Dr. D. H. Palmiter and Dr. K. G. Parker, plant pathologists at the agricultural experiment stations at Geneva and Ithaca, N.Y. "It is hardly safe to assume that any orchard is entirely free from chokecherries, even near the shore of Lake Ontario, where this wild species is

less common than elsewhere in the State." Writing in the January, 1949, issue of "Farm Research," published by the two New York stations, they say:

"The use of herbicide sprays appears to be the best way to destroy this host. One thorough application of a herbicide containing sodium chlorate or ammonium sulfamate at 3/4-pound to each gallon of water will give almost complete control if applied in midsummer to the foliage of plants that have not been recently cut. Both materials have given good kill of chokecherry, but the sulfamate is safer and kills a wider range of plants. This is a point to keep in mind when all the plants in the hedge row are to be destroyed."

During the past 10 years many growers in New York have reported poor yields in certain sour cherry orchards. These orchardists said the condition seemed to be spreading in the orchards, so that each year more trees were affected. They also observed that once a tree reached this condition, it never recovered.

In 1946 Palmiter and Parker noted that "chokecherries infected with X-disease were associated with every sour cherry orchard in which the sour cherries showed symptoms of the new disease."

"Further study in 1947 and 1948 showed that the heaviest concentrations of diseased cherry trees were along the margins of the orchards nearest the diseased chokecherries," they report. "At six locations, peach trees in or near the cherry orchards also showed typical X-disease symptoms."

Destruction of Chokecherries Stops Spread of Disease

"X-disease has been prevented from spreading into peach orchards by the removal of all chokecherries within 500 feet of the orchard," they continue. "Until more is known about the spread of the disease in cherry orchards, it is suggested that similar precautions be taken to remove this wild host from all cherry plantings and to remove the diseased cherry trees as soon as they become unproductive."

They add that burning or cutting the plants is a poor thing to do because "the chokecherry has a vigorous root system; and such treatments, even though repeated several times, have little effect on killing the plants. These treatments make them harder to kill by chemical means because the tops have been removed."

"The amount of spray required to cover 100 square feet will vary from 1 to 3 gallons, depending on the density and height of the plants and the type of spray equipment used. Care should be taken to wet all of the leaves on both the top and bottom sides as this results in a higher percentage of killed plants. More detailed directions for the destruction of the chokecherry may be found in Geneva Experiment Station Bulletin No. 704, on 'The Yellow-red Virosis of Peach: Its Identification and Control.'" Copy may be obtained by writing direct to the New York Agricultural Experiment Station, Geneva, N.Y.

(Du Pont weed control specialists advise that wilted chokecherry foliage is poisonous to livestock as a result of its hydrocyanic acid content).

SEED COUNTING APPARATUS USES "LUCITE" TO EXTEND USEFULNESS

By V. S. Peterson

Counting seeds of field crops such as corn, beans, and peas is essential when the seeds are tested for germination. Counting and uniform spacing are also of value when the seeds are prepared for planting in greenhouse beds or flats.

Hand counting is slow and uncertain, requiring utmost concentration. Seeds are poorly spaced on the blotters or other germinating media, and seeds often roll around to "bunch" and further complicate accurate counting.

Mechanical seed counting devices for most all seeds are now available. These machines count seeds accurately and rapidly -- 100 at a time. The uniformly spaced seeds are released on blotters, ready for germination testing.

Seed counting and planting plates or heads, seed blowers, and valve controls in the improved Ames Power Seed Counter are now made of "Lucite" acrylic resin.

E. L. Erickson, founder-owner of the Ames Powercount Company of Brookings, S.D., after testing in cooperation with Du Pont Company Plastic Department technicians, adopted "Lucite" for these purposes because it is transparent, light in weight, resists breakage, and is easily fabricated and accurately molded.

Mr. Erickson, whose company manufactures compact, portable, power-operated seed-counting devices and special equipment used in laboratories and seed-cleaning and seed-testing establishments, started work on the development of special seed-counting equipment while on the staff of Iowa State College; hence, the "Ames" in the company name.

The counting and planting heads of "Lucite" have proper sized holes for seed ranging from tiny tobacco, begonia and red top to alfalfa, sudan, then the small grains, and finally to corn, peas and beans. Size and count are generally standard, but can be made to specifications, too. In addition, planting heads 12"x15" or 12"x 24" are available for space planting seed directly into flats or beds, thus eliminating the need for transplanting tiny seedlings.

How The Ames Power Seed Counter Operates

To operate the Ames Powercount, a quantity of seed is placed at the closed corner of the counting head of "Lucite." It is tilted and moved to cause the seed to migrate, one seed stopping in each place. The excess seed is then poured off at the open corner and the count checked. In releasing the seed, the counting head is held above the substrate or over a pan and the plastic quick-release valve is closed, thus releasing the seed and depositing them on the substrate in a regular pattern.

Counting and planting plates for large seeds are also available, employing a perforated slip section over a second set of similar perforations. Plastic or specially treated wood is used in making these novel counting plates. In operating one of these, an excess of seed is placed on the counter and with proper motions the seed is caused to move over the upper perforated section, one seed stopping in each. After checking the count, the top section is slipped slightly to the right, seed falling through to the substrate or into a pan for transferring. Similar perforated counting plates are also in use for planting larger seeds in greenhouse flats or beds.

Advantages of Mechanical Seed Counting

"Machine counting is accurate and efficient," Mr. Erickson told the writer when both recently attended the annual meeting of the International Crop Improvement Association in Kansas City. "Exactly 100 seeds are counted instantly. An average saving of at least 65% in time is realized. With round seeds the time required for counting is reduced to one-tenth. A paramount requisite for accurate tests of seeds is assured -- the tendency to discard the ill-appearing seeds is eliminated. Seed distribution on the substrate is even and orderly, no two in contact.

"Diseases are prevented from spreading from one infected seed or seedling to a healthy one in cases where the seed has not been treated with suitable seed disinfectant. Moisture competition does not exist, since the seeds are well separated. Preliminary readings are unnecessary in cases where the seedlings stand upright through the duration of the test. Final readings can be made more accurately and in less time when seedlings are well spaced and not 'clumped'. Germination controversies will be greatly reduced, because more seed of a given lot can be tested in less time. And mental energy is conserved for other more important work where it will pay a greater return."

Thirty samples of clover and grass seed can be counted mechanically and planted in one hour. In other words, for average pure seed samples 12,000 seeds can be accurately counted and evenly spaced in one hour. After an operator gains experience, he can count and place 18,000 seeds accurately in one hour.

HOME DEMONSTRATION WORK HONORED BY CAVALCADE

Du Pont Cavalcade of America paid tribute to all home demonstration agents during Home Demonstration Agent Week, May 1 - 7. The story of the early days and growth of home demonstration work was portrayed in the play, "When We're Green We Grow." The dramatization was inspired by the book of the same title, written by Mrs. Jane McKimmon of Raleigh, North Carolina. She was one of the first five pioneer home demonstration agents and later the state home demonstration leader of North Carolina.

Mrs. McKimmon, who now makes her home in Raleigh, and who is eighty-one years young, appeared as the climax to the program, telling of the progress home demonstration agent work has made to date.

SOVIET COLLECTIVE FARM STORY ATTRACTS INTEREST

Our mail tells us that the extract of the New York Times story -- "Life on a Soviet Collective Farm" -- published in our May-June issue has been read with interest by many people. Some readers have told us that they would like reprints of the story to distribute to their friends. If you also desire reprints, simply write to Editor, Agricultural News Letter, The Du Pont Company, Wilmington, Del.

DEHYDRATED ALFALFA AND UREA SUBSTITUTED FOR SOYBEAN MEAL FOR FATTENING YEARLING STEERS

Alfalfa is an important crop in Nebraska, and is widely used in rations for fattening cattle, says a report issued by the University of Nebraska, entitled "Dehydrated Alfalfa and Urea As Sources of Supplementary Protein for Fattening Cattle." It adds:

"Because of the bulky nature of alfalfa hay as it is usually fed, it is not well suited to provide a desirable level of crude protein where fed with corn silage and corn or other cereal grains.

"The development of the alfalfa dehydrating industry in Nebraska seemed to offer the possibility that pelleted dehydrated alfalfa meal might provide a satisfactory source of additional crude protein in such rations. Developments within the past few years also suggested the possibility of using urea to meet some of the protein needs of fattening cattle."

Consequently, a feeder trial with 80 yearling steers in which dehydrated alfalfa meal and urea were studied as substitutes or partial substitutes for soybean oil meal in supplementary pelleted rations, was conducted by the University of Nebraska Animal Husbandry Department from May 23, 1947, to October 10, 1947, a period of 140 days. All but one of the supplements supplied approximately the same level of nitrogen.

"The urea was the product manufactured by the Du Pont Company, and offered under the trade mark 'Two-Sixty-Two' feed compound," the report explains. "It contained 42 per cent nitrogen."

A summary of results of the tests follows on the next three pages.

Continued on next page

UREA AS SUBSTITUTE SAVES APPRECIABLY IN SOYBEAN AND ALFALFA MEAL REQUIRED PER UNIT OF GAIN IN WEIGHT

In the University of Nebraska comparative tests with urea in pelleted supplements fed to yearling steers last year, "urea apparently was used satisfactorily, and its use was accompanied by appreciable savings in soybean oil meal and dehydrated alfalfa meal in feed required per unit of gain."

That is the conclusion of Marvel L. Baker, V. H. Arthaud, and Ellis Ruby of the Nebraska Agricultural Experiment Station at Lincoln. In a recent report, these research workers state they found that "the substitution of 9.8 per cent *'Two-Sixty-Two' feed compound for an equal amount of dehydrated alfalfa meal, where both supplements were fed at a level of 1.5 pounds per head daily, apparently resulted in increased gains and decreased feed requirements per unit of gain."

All of the eight lots of ten 675-pound good-to-choice Hereford yearling steers used in the test sold at the same price, and differences in carcass yields and grades were not considered significant. The rate and economy of gain in all cases were satisfactory, the Nebraska animal husbandmen state. They add:

Dehydrated Alfalfa Meal Economical Feed

"Generally, as the proportion of dehydrated alfalfa meal in the supplement increased, the average daily gain increased, and less ground ear corn and corn silage per unit of gain were required. In this trial, dehydrated alfalfa was an economical feed if usual price relationships are assumed. Feeding 3.0 pounds of dehydrated alfalfa meal (Lot 4) in comparison with 1.5 pounds per head daily (Lot 5) was accompanied by an increase in average daily gain and, under prices generally prevailing, in more economical gains." (See page 74 for explanation of daily ration fed different lots.)

Three of the eight lots (Nos. 6, 7, and 8) were fed supplements containing urea. These supplements were all fed at the rate of 1.5 pounds per head daily, and "there was little difference in the feed required per unit of gain," according to Professor Baker and his associates.

*Editor's Note: In the formulation of commercial mixed feeds for cattle and sheep, "Two-Sixty-Two" feed compound can be used to supply one-third of the protein in the ration. This usually means approximately 3 per cent "Two-Sixty-Two" in an 18-24 per cent feed mixture. In concentrates ranging up to 40 per cent or more protein, it is recommended that never more than 5 per cent of "Two-Sixty-Two" be used. However, in research work like the Nebraska study reported herein, it is possible to use even higher levels of "Two-Sixty-Two" because of the controlled feeding conditions.

These lots fed urea-containing supplements were compared directly with the lot for which the supplement was made of soybean oil meal (No. 1) fed at the rate of 1.5 pounds per head daily. In this comparison, the steers fed the urea-containing supplements "made larger average daily gains. Their gains were more economical based on the feed required per unit of gain."

Comparisons Between Supplements Containing Urea

The information developed by these tests permit three direct comparisions between supplements in which urea was used to replace a part of the supplemental feed on an equivalent nitrogen basis. These comparisions, are made by the Nebraska research workers, as follows:

> Lot 6 made an average daily gain of 2.6 pounds per head; Lot 2 made 2.52 pounds. On a feed-efficiency basis, these data show that 100 pounds of "Two-Sixty-Two," as fed to Lot 6, saved 412 pounds of soybean oil meal, 412 pounds of dehydrated alfalfa meal, 690 pounds of ground ear corn, and 1,621 pounds of corn silage.
>
> Lot 7 made an average daily gain of 2.61 pounds; Lot 3 made 2.62. On a feed-efficiency basis, 100 pounds of "Two-Sixty-Two" plus 1,031 pounds of ground ear corn was worth as much as 187 pounds of soybean oil meal, 747 pounds of dehydrated alfalfa, and 22 pounds of corn silage.
>
> Lot 8 made an average daily gain of 2.69 pounds; Lot 4 made 2.71 pounds. In this comparison 100 pounds of "Two-Sixty-Two" plus 419 pounds of ear corn replaced 1,084 pounds of dehydrated alfalfa and 109 pounds of silage.

An additional estimate of the value of urea was afforded by comparision of Lots 8 and 5. Lot 5 made an average daily gain of 2.47 pounds and Lot 8, 2.69 pounds per head daily. On the basis of feed required for 100 pounds gain, 100 pounds of "Two-Sixty-Two" saved 191 pounds of dehydrated alfalfa, 1,020 pounds of ground ear corn, and 601 pounds of corn silage.

On the basis of a ton of dehydrated alfalfa, plus a little over 200 pounds of "Two-Sixty-Two," the feed requirement values in these comparisions follow:

> Lots 6 and 1. -- One ton dehydrated alfalfa meal plus 211 pounds of "Two-Sixty-Two" fed as a protein supplement saved 2,646 pounds soybean oil meal, 4,065 pounds ear corn, and 4,936 pounds corn silage.
>
> Lots 7 and 1. -- One ton dehydrated alfalfa meal plus 217 pounds "Two-Sixty-Two" fed as a protein supplement saved 2,551 pounds soybean oil meal, 1,478 pounds ear corn, and 2,193 pounds corn silage.

Lots 8 and 1. -- One ton dehydrated alfalfa meal plus 217 pounds "Two-Sixty-Two" fed as a protein supplement saved 2,534 pounds soybean oil meal, 2,217 pounds ear corn, and 2,178 pounds corn silage.

"Again, the replacement value of dehydrated alfalfa meal was remarkably uniform," as was the case when the research workers made comparisons between other lots fed the various supplements, which "also showed high replacement values of dehydrated alfalfa meal."

WHAT YEARLING STEERS IN NEBRASKA TESTS WERE FED

Yearling steers in University of Nebraska experiments were full fed corn silage and ground ear corn with 0.1 pound steamed bone meal per head daily for 140 days. They also had access to salt and water, and different lots of steers were fed different pelleted supplements, as follows:

Daily Supplement

LOT NO.

1. - 1.5 lbs. soybean oil meal.

2. - 2.0 lbs. mixture equal parts by weight soybean oil meal and dehydrated alfalfa meal.

3. - 2.5 lbs. mixture one part soybean oil meal and four parts dehydrated alfalfa meal.

4. - 3.0 lbs. dehydrated alfalfa meal.

5. - 1.5 lbs. dehydrated alfalfa meal.

6. - 1.5 lbs. mixture of supplement fed Lot 2 and enough urea to provide same nitrogen level as that of soybean oil meal. This was 1.5 lbs. mixture of 5% "Two-Sixty-Two" feed compound and 95% of supplement fed Lot 2.

7. - 1.5 lbs. mixture of supplement fed Lot 3 with enough urea to provide same nitrogen level as soybean oil meal. This was 1.5 lbs. mixture of 8% "Two-Sixty-Two" and 92% of supplement fed Lot 3.

8. - 1.5 lbs. mixture dehydrated alfalfa meal with enough urea to provide same nitrogen level as soybean oil meal. This was 1.5 lbs. mixture of 9.8% "Two-Sixty-Two" and 90.2% dehydrated alfalfa meal.

These supplements supplied approximately the same level of crude protein (N x 6.25), except Lot 5, where 1.5 lbs. dehydrated alfalfa meal were fed.

MACHINE FOR PACKAGING VEGETABLES IN CELLOPHANE RIGHT WHERE THEY ARE GROWN EXHIBITED BY DU PONT

Automatic machine packaging of head-type vegetables, bacon, tomatoes, and flowers for vending machines were among the packaging developments featured by the Cellophane Division of E. I. du Pont de Nemours & Company at the 18th National Packaging Conference and Exposition held in Atlantic City, N.J., recently.

Emphasis was on prepackaging for self-service, with the machine-wrapped lettuce, broccoli, spinach, and cabbage being one of the latest developments. By wrapping produce in transparent film, heads can be stripped at the point of growth and only the usable portion shipped, it was pointed out. The automatic-wrapping operation keeps the production cost at a low figure for the grower. It was anticipated that packaging of this type will meet with favor among growers in California, Texas, and Florida.

Machine-wrapped "platter-style" bacon in flat packages was another feature of the exhbibit. Better visibility in this type of package enables the housewife to determine the number of slices in the package and whether the bacon is lean or fat. Wrapped automatically in cellophane over a board backing, the bacon is laid flat, making a tighter package, thereby reducing the air spaces and possibilities of oxidation.

Special Unit for Tomatoes Developed

A new "Full View" pre-packaged tomato unit was included in the Du Pont exhibit. Tops and bottoms of the tomatoes can be inspected by the shopper through the open-top and bottom die-cut box.

Pre-packaged cut flowers, shown as a new idea by Du Pont a year ago, were included in the exhibit as actual commercial developments. The open-top, cellophane-wrapped box, is not only ideal for display, but the special type of cellophane designed for this use gives longer life to the flowers by sealing in the carbon dioxide which the flowers give off.

Du Pont's concentration on attractive, self-service packages is based on the buying habits of American shoppers. The company's Market Research Division in its survey work determined that 38.4 per cent of the purchases in supermarkets were in the unplanned category. In service-type stores where there is less open display and variety, surveys show that almost 30 per cent of the purchases are unplanned. When it is considered that Americans in 1948 spent more than 30 billion dollars in food stores, the percentage of unplanned purchases takes on added importance.

SEED DISINFECTANTS ADD THIRTY MILLION BUSHELS TO IOWA'S CORN CROP AT COST OF HALF CENT PER BUSHEL

A simple, inexpensive method of seed protection, discovered by agricultural research workers, added 30,000,000 extra bushels to Iowa's corn crop in 1948, according to figures made public by Iowa State College at Ames.

"It was back in 1919 when plant scientists, including Dr. C. S. Reddy, now stationed at Iowa State College, first began to look into the matter of controlling certain corn diseases through treating the seed with fungicides," the statement explains. "Their experiments have led to a new agricultural practice which today is almost as universal in Iowa as plowing and planting."

The statement issued before the 1949 planting season, predicted that, "when corn is planted in the rich prairie land of the state this spring, practically every bushel of the seed will have been subjected to treatment. Tests in the last 10 years have shown that a dollar invested in seed corn treatment returns about 200 bushels of corn at harvest time.

"Farmers and seedsmen in the state invested $150,000 in corn seed treatment last year. Careful checks indicate that gains were more than 30,000,000 bushels at a cost of about one-half cent per bushel. Similar results can be shown in many of the other Corn Belt states."

The Iowa statement points out that a great deal of the story of seed treatment in corn revolves around Dr. Reddy. When he first began research on corn diseases as a United States Department of Agriculture worker not long after World War I his co-workers could see little value in seed treatment. The statement quotes the co-workers as saying:

Early Treatments Unsuccessful

"Certain diseases of small grains, especially smut, can be controlled by seed treatment. But you cannot treat corn seed because treatment makes it yield less. Anyway, why treat corn at all? Corn smut is not seed-borne.

"With the help of Dr. J. R. Holbert of the USDA, Reddy tested the efficiency of seed treatment chemicals that were then in use," the Iowa report continues. "Bichloride of mercury, especially, seemed to help control disease. Yet, whenever treatment was used, yields were lowered. After two years, a report was made advising that this work be discontinued until better fungicides were developed.

"In 1921 a new chemical was reported as successful in the control of stripe disease in barley. It was an organic compound of mercury called 'Chlorophol', and Reddy tested the material in the laboratory on black bundle diseased seed corn. Results were encouraging.

"He renewed field seed treatments the next year. These were the first successful corn seed treatment experiments. They were made about 10 years before hybrid corn was developed.

"Organic mercury compounds were the start of increasing activity in the realm of seed corn treatment. New material for the control of plant diseases and insects began appearing in greater numbers. Recently there has been a trend away from highly poisonous compounds to those less toxic to men and animals.

"Even the new materials irritate the skin and mucous membranes, however. So the method of application has been changed. Some materials are now applied in wet suspension form or 'slurry' instead of dust."

Slurry Method Now Popular

The report says that among seed protectants now in common use in Iowa is "Arasan" SF seed disinfectant, at the rate of 2/3 oz. per bushel. It says "Arasan" SF is best used in a slurry, and experiments are still under way to perfect this method. In the meantime, paper-lined bags or bags coated to make them almost impervious to dust are sometimes used.

"Emphasis now has been placed on a new aspect of the problem of seed corn treatment," the report adds. "With the advent of hybrid seed corn the better trained seedsmen eliminate most of the seed-born diseases by their practice of earlier harvesting, better selection, and artificial drying.

"Today most seed treatment is aimed at protecting the seed from harmful effects of pathogens in the soil.

"Constant research has uncovered the conditions under which greatest benefit is obtained by seed treatment. It has been found that the severity of adverse conditions just before or just after planting have much to do with results. Condition of the seed also has a good deal to do with effectiveness of treatment. Treatment is of most value on immature and older seed that are somewhat low in vitality or seed that has been injured in harvesting and shelling.

"Other experiments have shown that the greatest benefit comes from seed treatments when the soil is at about 50 to 60 percent of its moisture-holding capacity. Seed treatment is of value under flooding conditions, too. Good stands have been obtained from treated seed after flooding for three days, while untreated seed resulted in half stands or less.

"The whole story of corn seed treatment has not yet been told. Treatments in use today were unknown eight years ago. New chemicals and new methods of application are being developed each year. The outstanding material last year was discovered only three years ago.

"Dr. Reddy, still at his task along with other agricultural researchers who have joined the battle, is confident that even better things are ahead."

OKLAHOMA STATION REPORTS INTERESTING RESULTS WITH TCA

Tests of the new weed killer -- trichloroacetate (TCA) -- for Bermuda grass and Johnson grass in Oklahoma have shown it to be generally effective if the soil is moist when applied. *

Experiments with TCA at the Oklahoma Experiment Station in Stillwater are described in a recent bulletin by W. C. Elder, assistant agronomist and a specialist on weeds. Results with TCA at the Agricultural Experiment Station of Kansas State College at Manhattan were described in the last issue of the Agricultural News Letter.

The Oklahoma tests were made in 1947 and 1948, and Mr. Elder points out that "much more experimental work is necessary before all the possibilities, limitations, and best methods of using this new chemical for weed control can be established." He reports that TCA was applied in monthly intervals. "Johnson grass," he said, "was treated at several stages of growth, from the closely mowed to 24 inches high. Bermuda grass was treated one to two inches high as found on a mowed lawn. Field crops were planted in the plots at 30-day intervals after treatment to check the length of time the chemical remained in the soil."

In the 1947 tests, Mr. Elder reports that it was extremely dry and hot in August. The results on Bermuda grass were not good that month, but in the other months from June to October there were "almost complete kills."

Soil Sterilization Only Brief with TCA

In 1948, TCA was found unsatisfactory in May and June on Bermuda grass, but "July and August treatments completely eradicated the grass. Heavy rainfall which occurred in June and July, 1948, evidently leached the chemical out of the soil because all field crops made normal growth 30 days after treatment."

On Johnson grass, 90% to 95% kills on the grass were reported in 1947 and 1948 "when applied at the proper time." This means that some grass did recover from all treatments.

Mr. Elder said that the best kills were obtained with Johnson grass when it was from 12 to 18 inches high at the time of treatment. The tests showed that the best time to treat Bermuda grass was when it was one to two inches high.

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* The new compound has just been placed on the market as Du Pont Sodium TCA Weed Killer.

Continued on next page

Mr. Elder came to the conclusion that TCA might be of most value "around the home where Bermuda lawns are spreading to flower beds and gardens. Or it might be used for very small spots of Bermuda and Johnson grasses in cultivated fields." In Oklahoma, spots of Johnson grass in alfalfa fields give farmers plenty of trouble. He added:

"TCA will kill all plant vegetation above ground. It sterilizes the soil for only a short time, which is an outstanding advantage over many other soil sterilants. Where long sterilization is desired, such as in a fence row, sodium chlorate is recommended."

Internal Parasites Kill Many Lambs

LITTLE ROCK, ARK. -- Internal parasites in lambs can best be controlled through self-feeding of a phenothiazine-salt mixture, according to M. W. Muldrow, University of Arkansas, extension animal husbandman. He recommends using one part phenothiazine to nine parts salt. The mixture can be placed in feeding troughs, but he urged that care should be taken to protect it from weather and other livestock. In addition, Mr. Muldrow recommends individual doses of phenothiazine twice a year -- one in the fall and again in the spring, just before the flock is turned out to pasture.

Structural Defects Blamed for Farm Fires

Half of all farm fires could be prevented if structural defects in farm buildings were remedied, the National Fire Protection Association says. The NFPA recommends these safeguards:

1. Adequate and properly installed wiring.
2. Soundly constructed chimneys.
3. Properly installed lightning rod systems.
4. Fire-resistant roofing for all farm buildings.
5. Heating plants in good condition.
6. Fire stops in the walls and partitions.

Fire in 1948 took the lives of about 3,500 farm residents, approximately one-third of the entire nation's toll from fire. Since only about one-fifth of the people in the United States live on farms, it is obvious that fire threatens farm residents more than it does people in cities and towns. Property loss on farms was about $100,000,000 in 1948.

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